USF Reform Proposal

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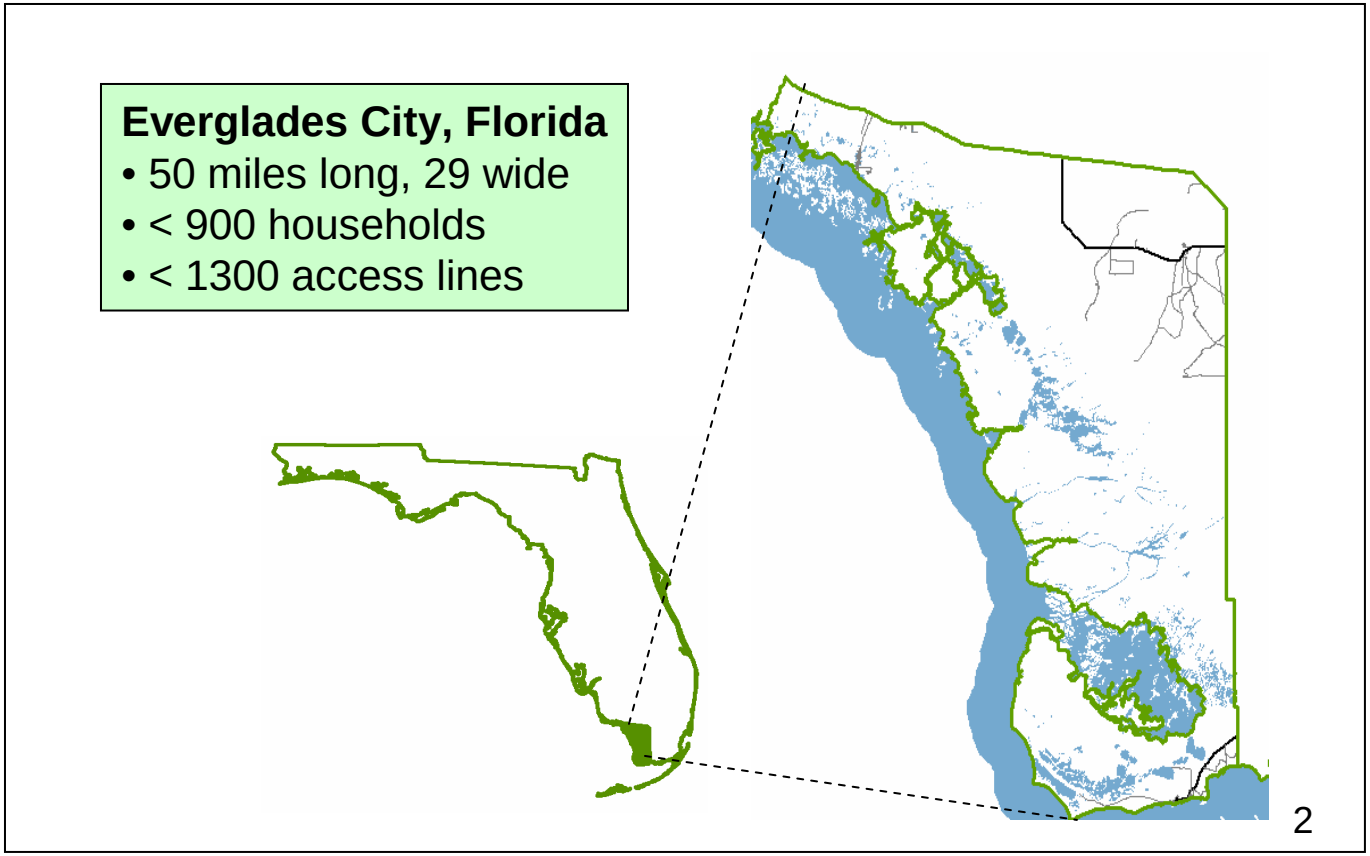
- Fundamental Fact #1: There are areas in this country that are uneconomic to serve using any network technology – wireline or wireless.



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- Fundamental Fact #1: There are areas in this country that are uneconomic to serve using any network technology – wireline or wireless.
- Fundamental Fact #2: We, as a country, have decided that voice service will be provided ubiquitously regardless of the economics.

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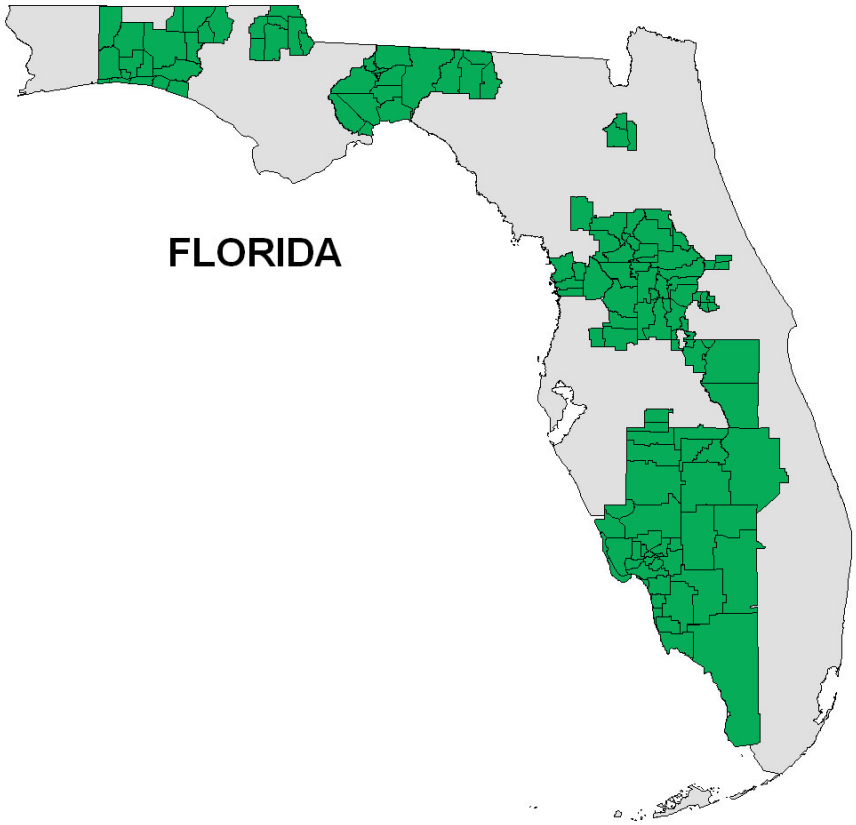
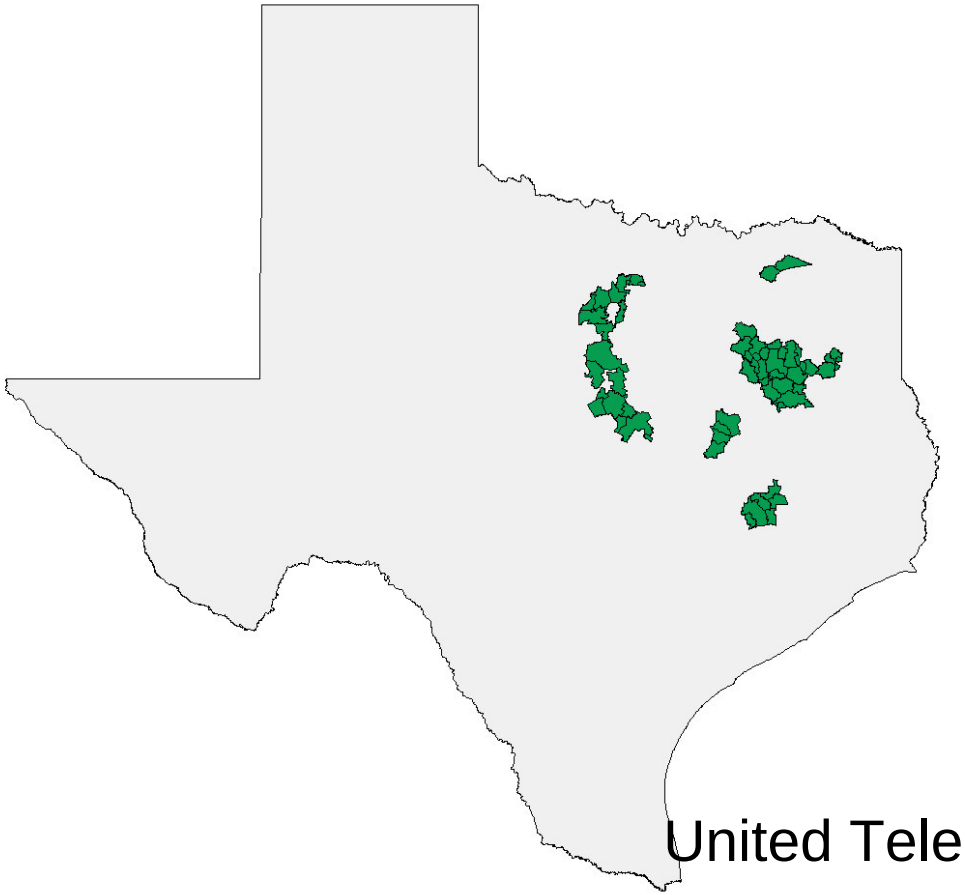
Embarq Florida Inc





United Telephone of Texas d/b/a/ Embarq

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Separable Issues

What is the proper geographic area to use to determine need?

- Should support be distributed through a reverse auction mechanism?
- Should more than one carrier receive support in a given area?
- Should broadband be included in the set of supported services?
- Should we use a revenue benchmark, a rate benchmark or a cost benchmark?
- Should wireless carriers receive support based on their own costs or ILEC costs?

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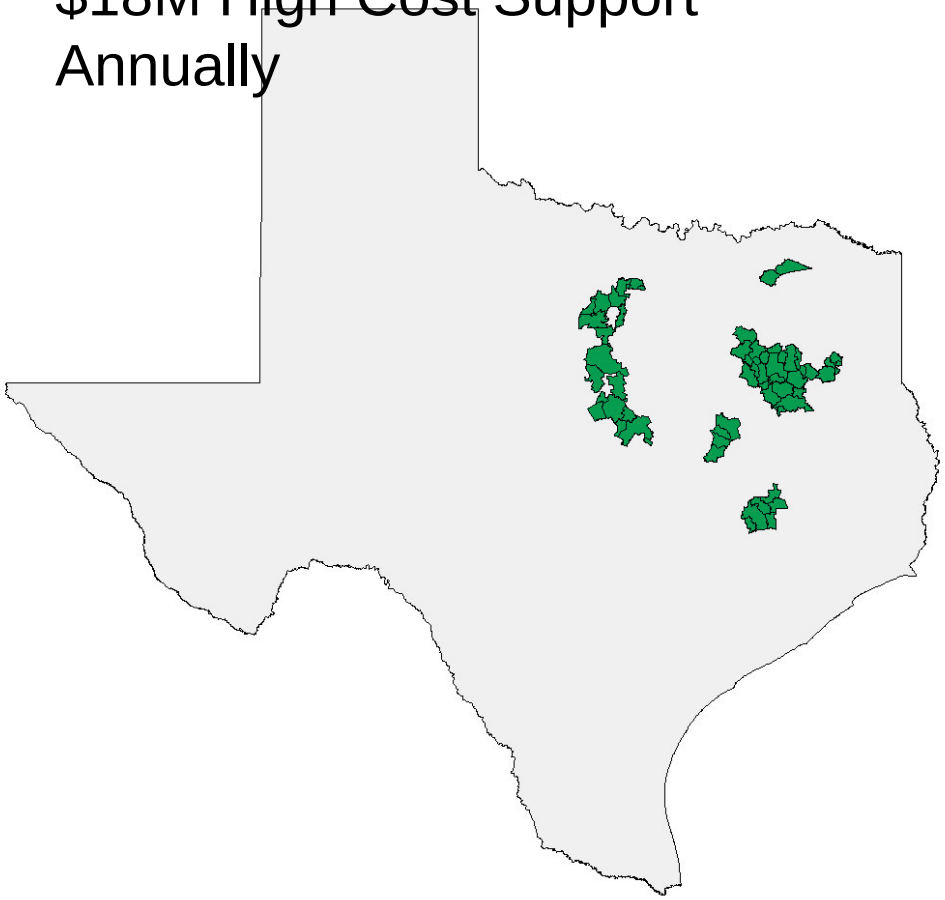
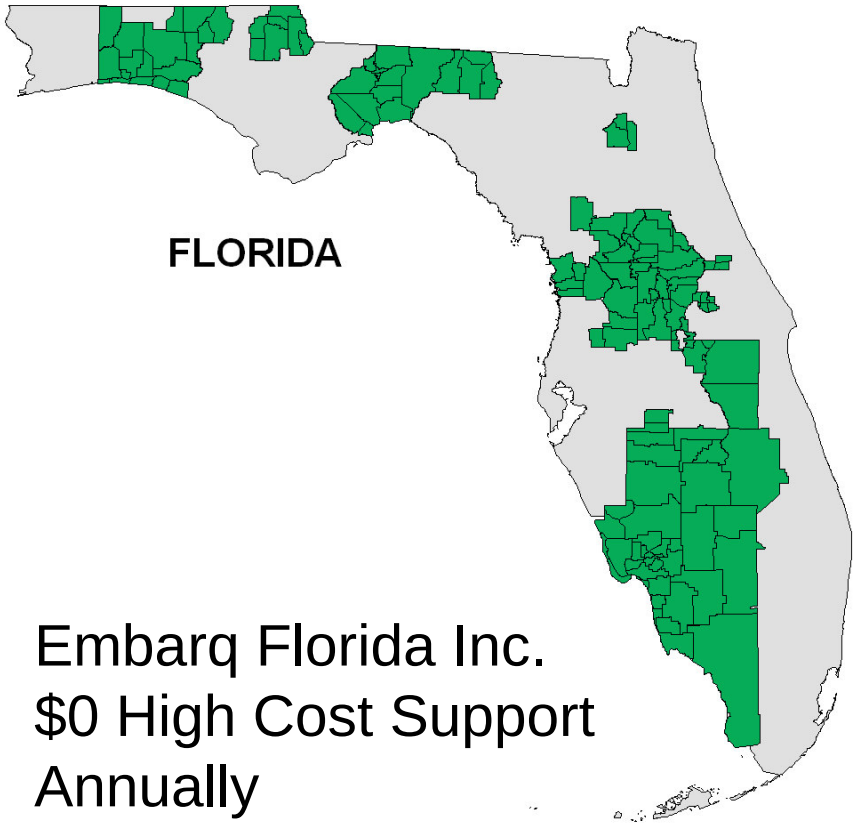
United Telephone of Texas
d/b/a/ Embarq-
$18M High Cost Support
Annually





Embarq Florida Inc.
$0 High Cost Support
Annually

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Things We Know…

1. Competition for voice service is rampant
2. Implicit subsidies are unsustainable in a competitive environment
3. Using entire study area to determine "need" maintains assumption that implicit subsidies can be relied upon, so…
4. The "need" for support must be determined more granularly.

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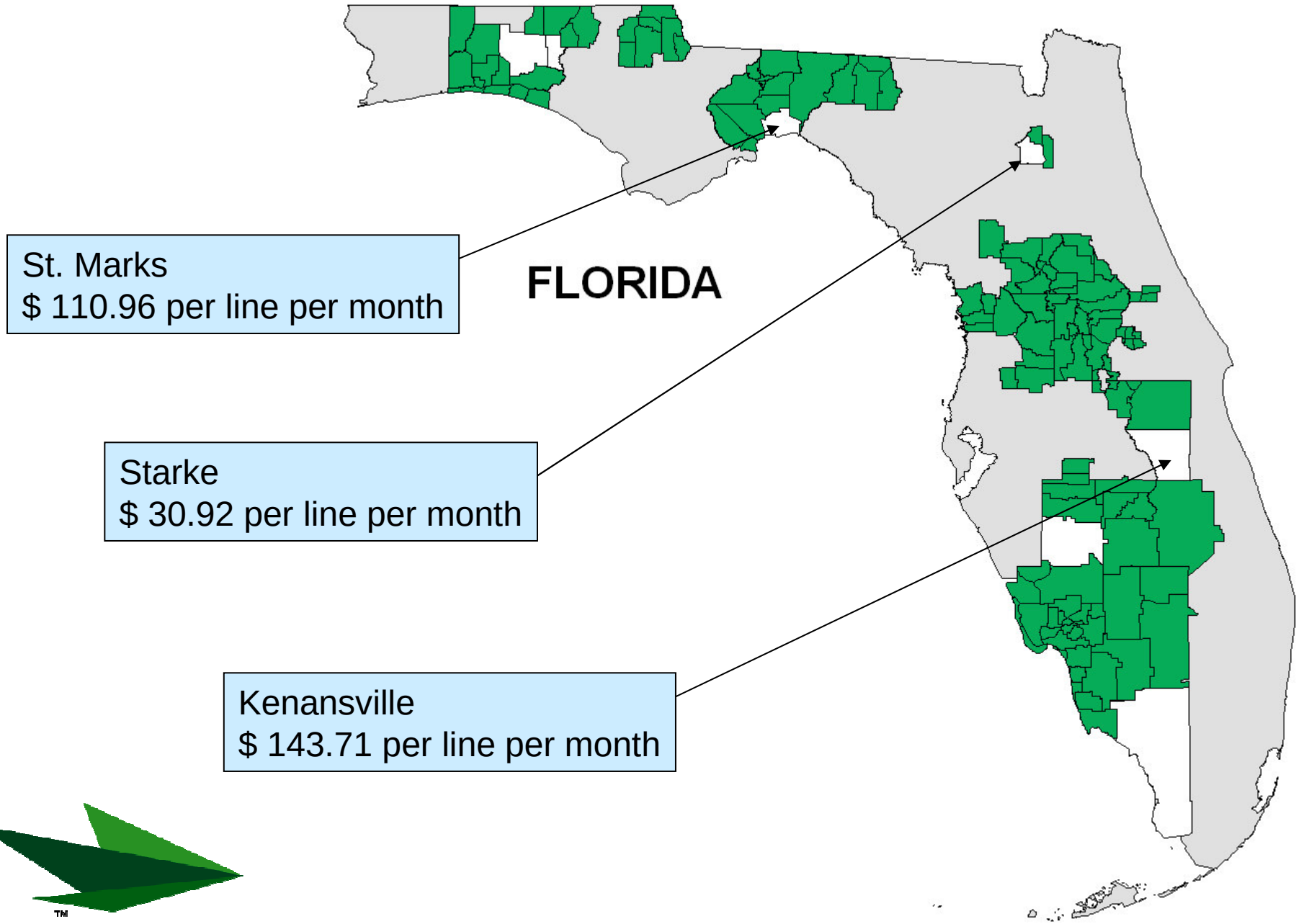
St. Marks
$ 110.96 per line per month
FLORIDA
Starke
$ 30.92 per line per month
Kenansville
$ 143.71 per line per month

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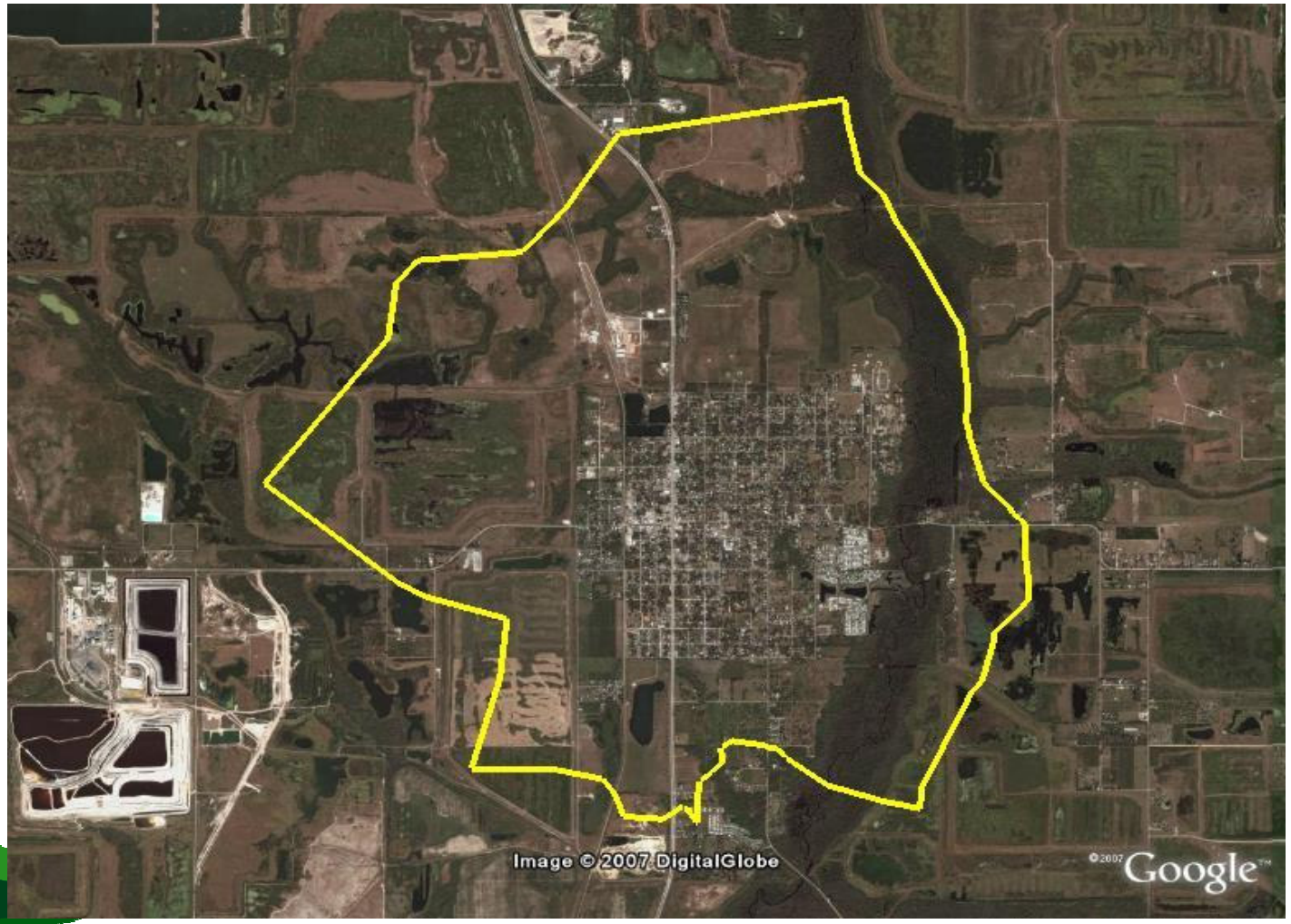
Fort Meade, Florida
City Center



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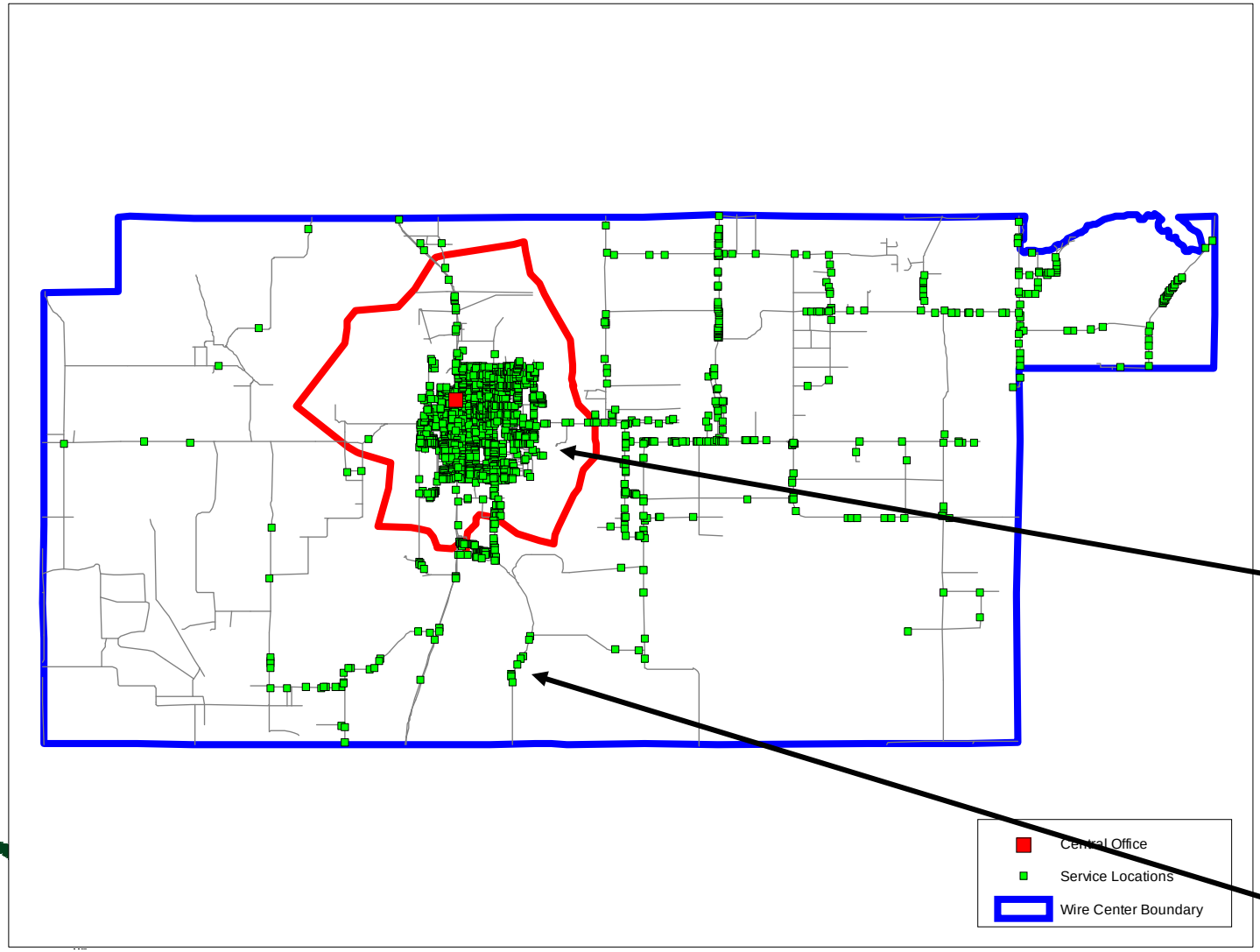
Fort Meade, Florida
Investment Overview



Wire Center

Total Lines Served

2,893

Investment per Line

$2,650

City Center

Total Lines Served

2,188

Investment per Line

$1,308

Outside City

Total Lines Served

705

Investment per Line

$6,820

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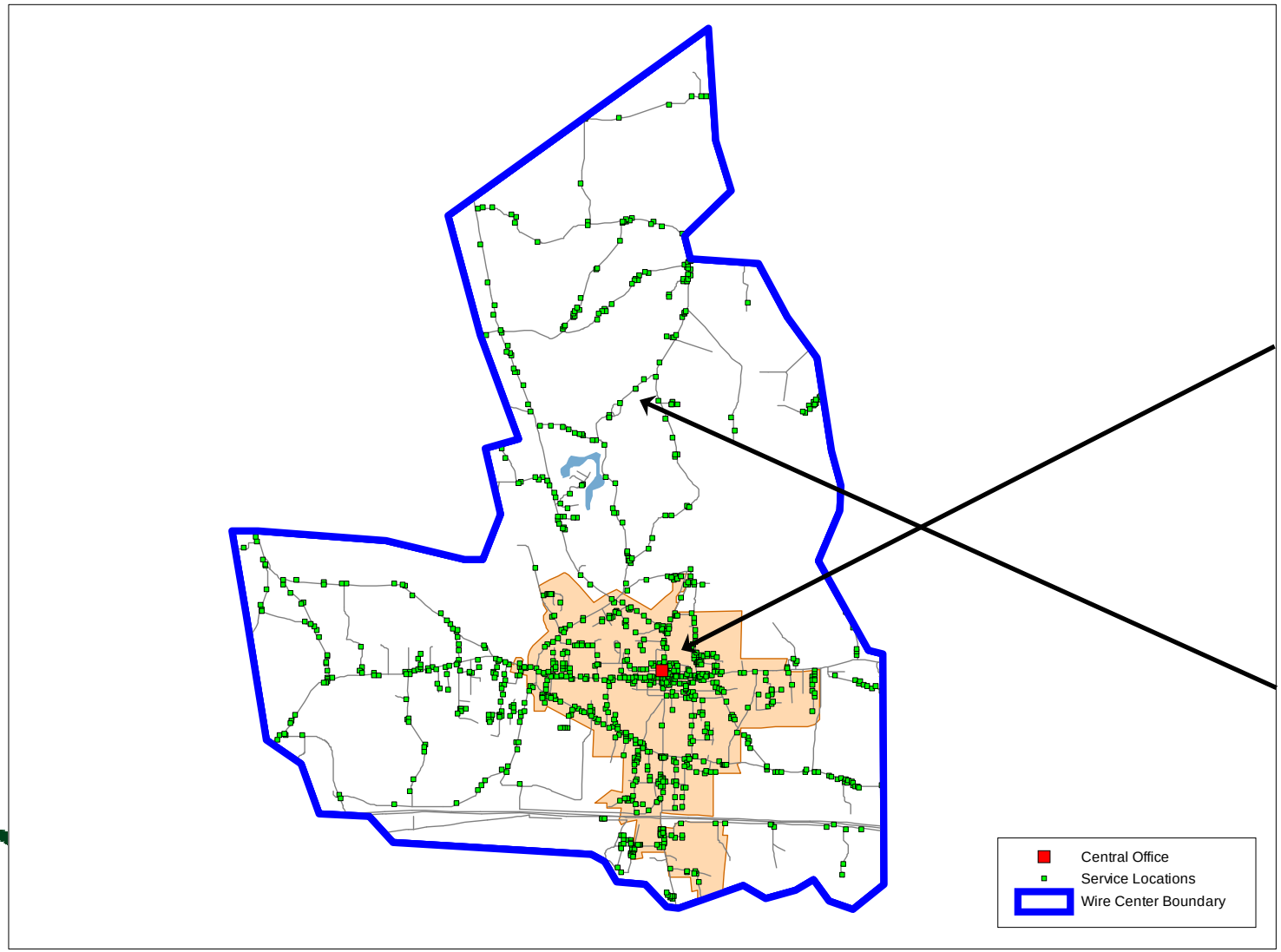
40% access line loss where costs are low…



Wire Center

Total Lines Served

1,899

Investment per Line

$1,370

City Center

Total Lines Served

1,572

Investment per Line

$920

Outside City

Total Lines Served

327

Investment per Line

$3,570

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Why the need for support must be calculated more granularly…

1. Implicit subsidization exists ***between*** wire centers.
2. Implicit subsidization exists ***within*** a single wire center.
3. Neither form is sustainable in the face of competition.

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The right way to support universal service…

- A sub-wire center approach…
  - Call it a donut-and-hole approach
  - Call it zone-based approach
- We must re-determine which areas are uneconomic to serve by creating zones within individual wire centers
- Support—however it is then calculated, whatever it is based on, and whatever services it includes—is then provided to these uneconomic areas
- …***and it's not that hard to do!***

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Actual Output from FCC's Synthesis Model:

Model in its current form can be used to calculate costs at a more granular level.

Zone 1: Low cost, high-density.

Zone 2: High-cost, low-density

CLLI	Total Lines	density lines/sq mi	Investment Per Line
EVSHARX	196	49.20	$ 1,379
EVSHARX	36	9.70	$ 6,722
EVSHARX	15	5.27	$ 8,767
EVSHARX	12	11.76	$ 10,896
EVSHARX	16	7.07	$ 9,537
EVSHARX	7	10.21	$ 11,251
EVSHARX	15	5.22	$ 10,032
EVSHARX	25	7.80	$ 6,516
EVSHARX	26	5.92	$ 7,713
EVSHARX	10	3.18	$ 11,021
EVSHARX	26	10.46	$ 7,464
EVSHARX	20	4.87	$ 7,639
EVSHARX	14	3.07	$ 10,700
EVSHARX	19	5.65	$ 8,852
EVSHARX	24	6.54	$ 7,370
EVSHARX	21	5.96	$ 8,386

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Different Ways to Make A Donut

Creating sub-wire center USF requires a two-part process:

1. Separate land area of wire center into two zones (inner v. outer, donut v. hole)
2. Calculate cost of serving each zone; determine where support is needed

Separation must be based on some smaller unit of geography that can reflect density differences (which translate to cost differences)

Possible ways to establish zones (all currently available)

- **Census blocks** or CBs (geographic units created by U.S. Census Bureau; available on standard mapping software; cover the entire country)
- **Census block groups** or CBGs (groupings of CBs; created by Census Bureau)
- **Carrier serving areas** or CSAs (characteristic of wireline networks; created by engineers and/or by cost models (FCC's HCPM Model, Embarq's Model, CostQuest Model all create CSAs); can cover any geographic area modeled)
- **City limits** (publicly available on mapping software; may not be applicable in all areas)
- **Clusters** (currently available on FCC's Synthesis Model (HCPM))

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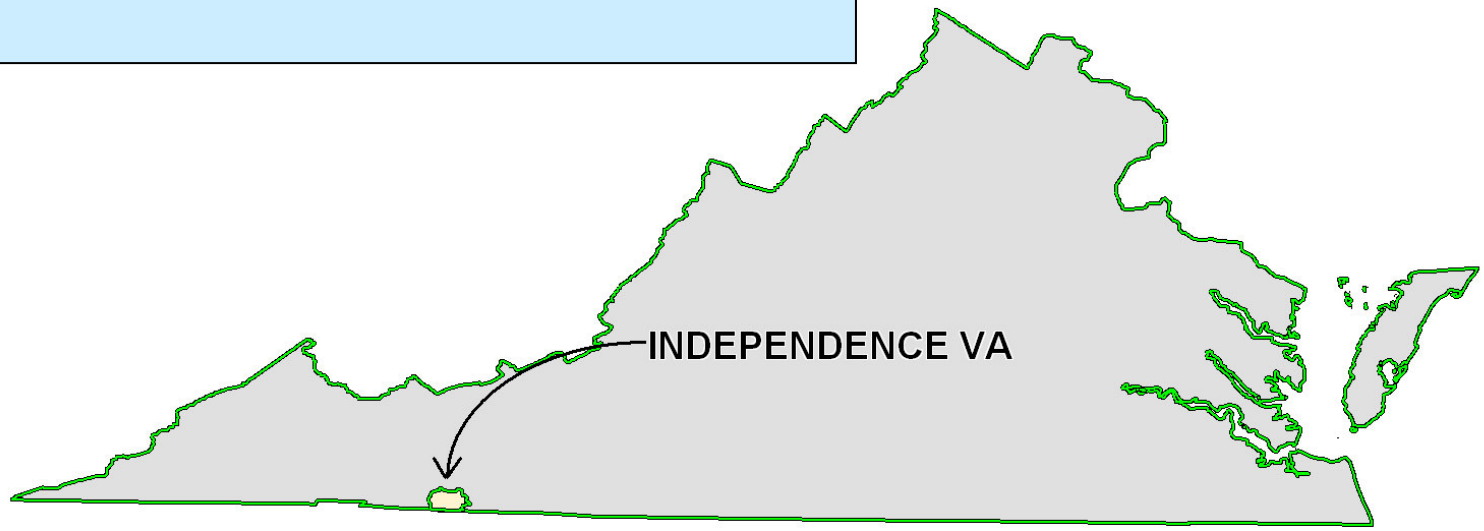
The following slides depict different methods for creating zones in Embarq's Independence, Virginia wire center that could be used for targeted USF support.



Independence, Virginia:

- Fewer than 2,000 households
- Over 85 square miles
- Average density – 20 to 25 HH per square mile
- Outlying area density – less than 10 HH per square mile

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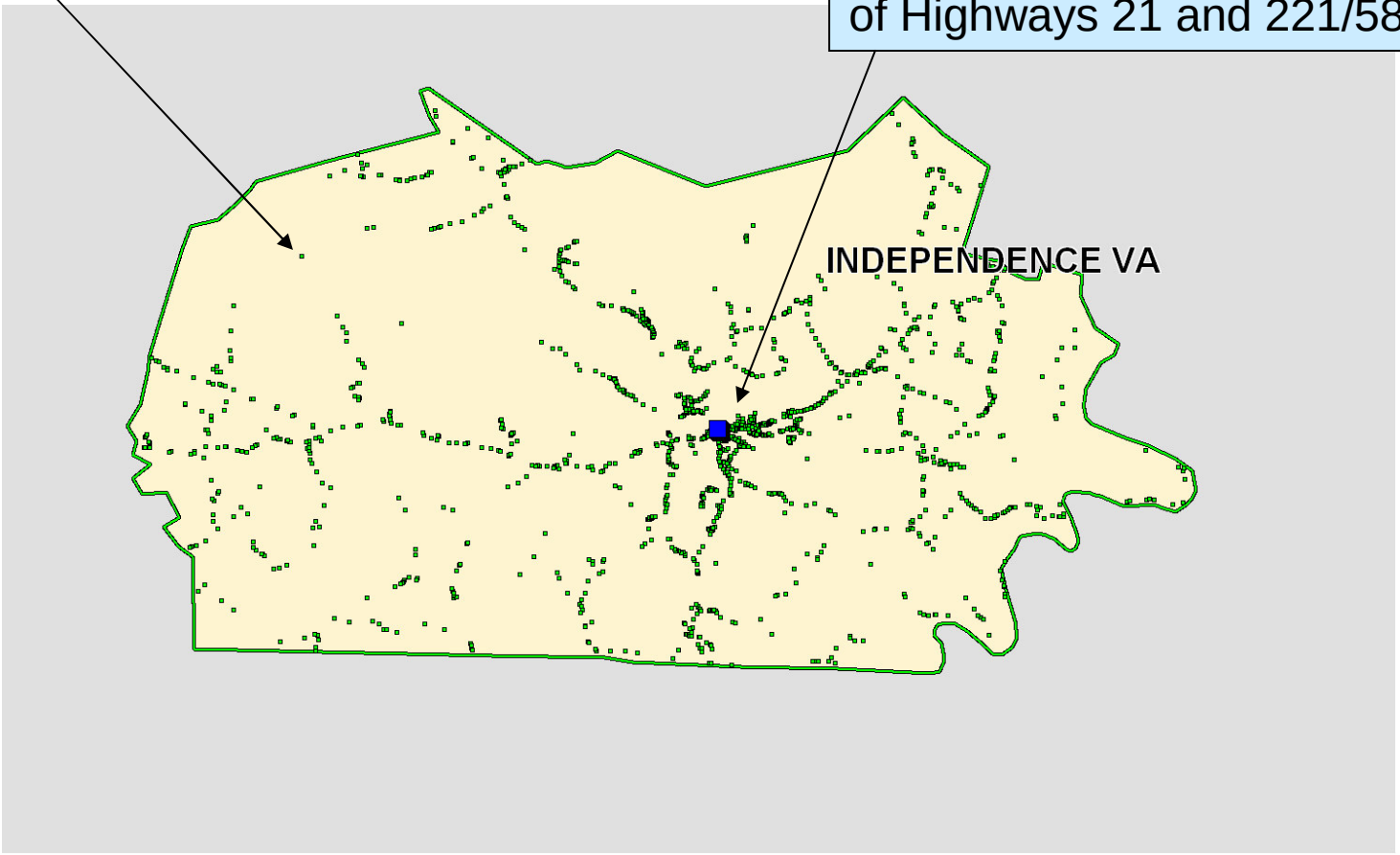
Each green dot represents an individual customer location

Majority of customers located near town of Independence, at intersection of Highways 21 and 221/58



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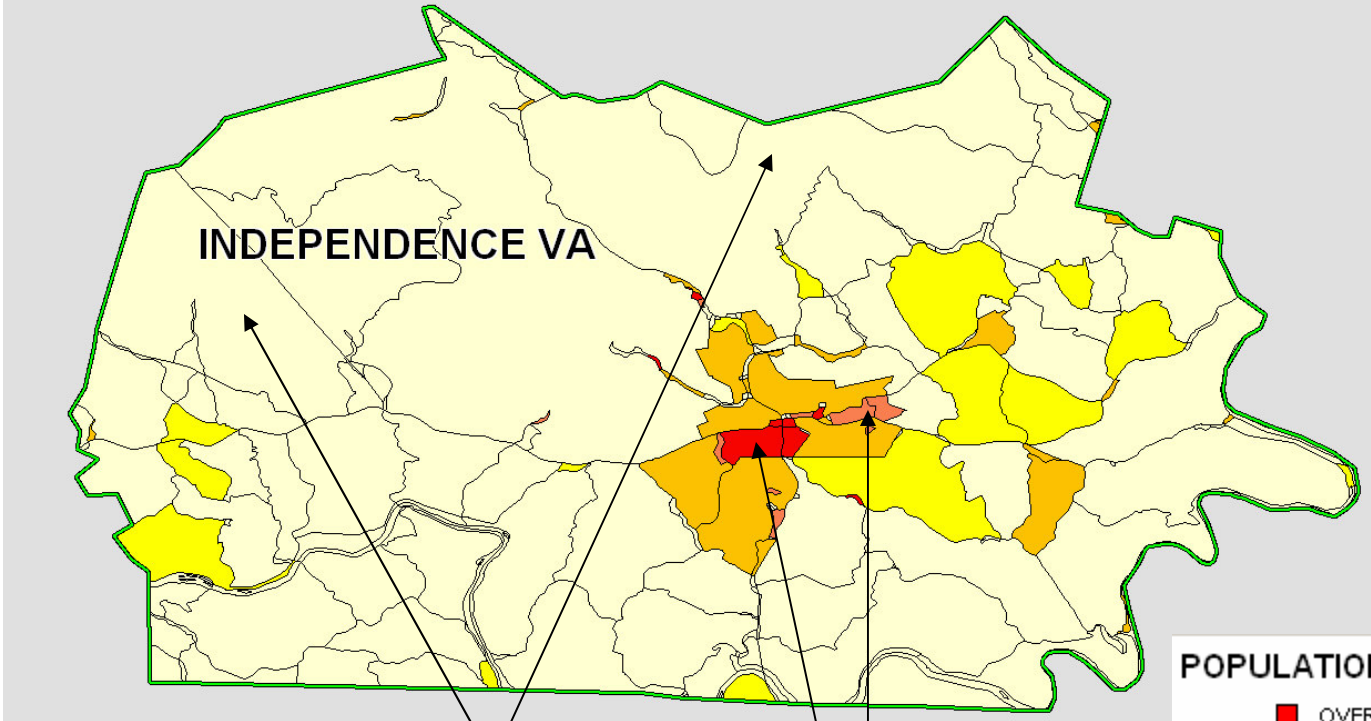
Individual **Census Blocks**:
Each polygon on this slide is
a separate census block (CB)
Created by US Census Bureau



Lowest Density/Highest Cost CBs

Highest Density/Lowest Cost CBs

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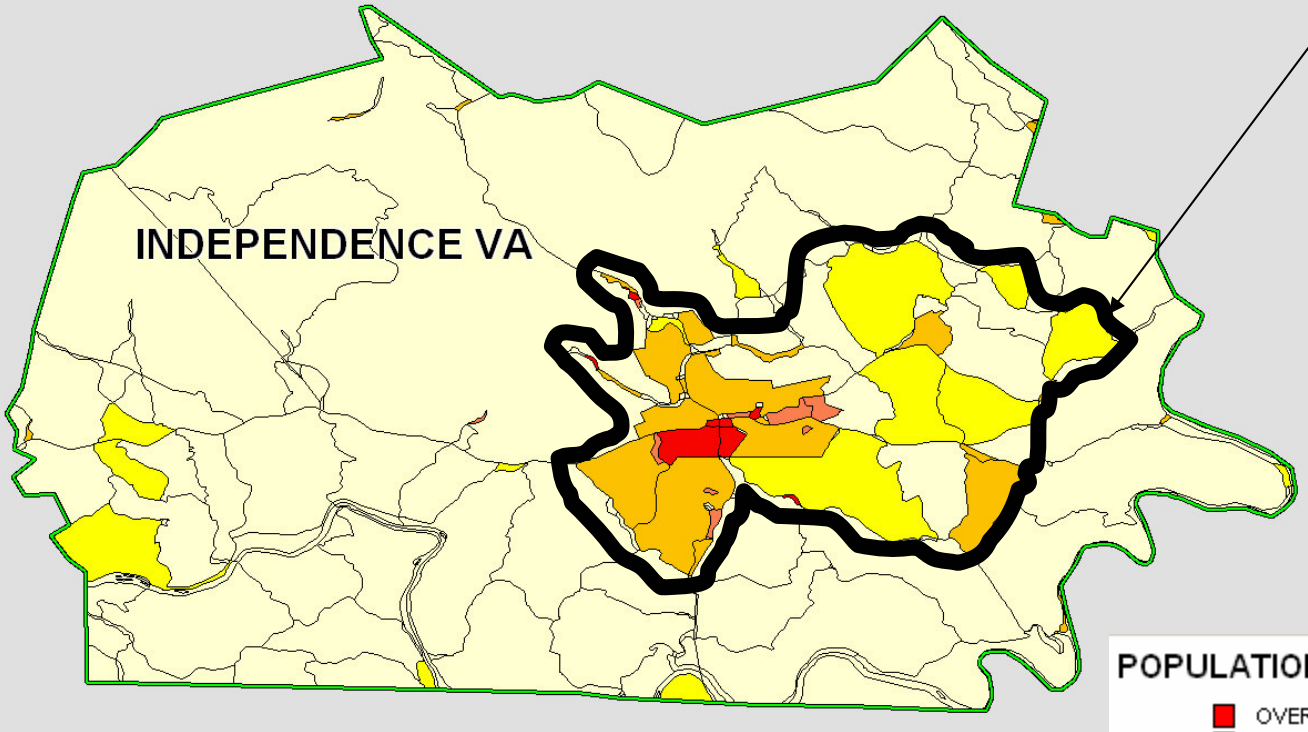
Individual Census Blocks: Each polygon on this slide is a separate census block

Contiguous census blocks could be **grouped** by density to create inner and outer zone.



Clustering programs, such as those currently used in the FCC's HCPM, could be used to do grouping.

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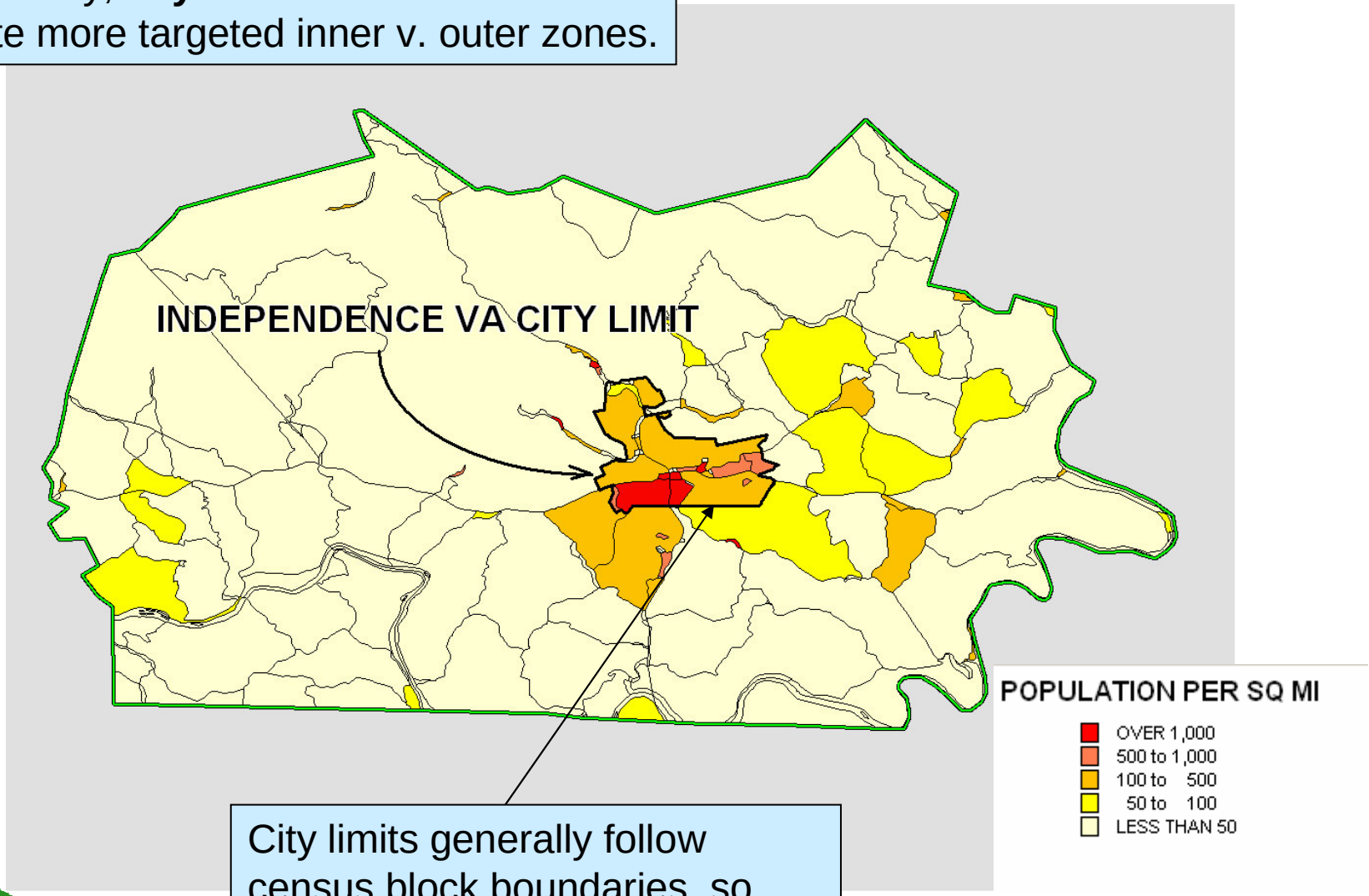
Alternately, **city limits** could be used to create more targeted inner v. outer zones.



City limits generally follow census block boundaries, so census block remains basic unit.

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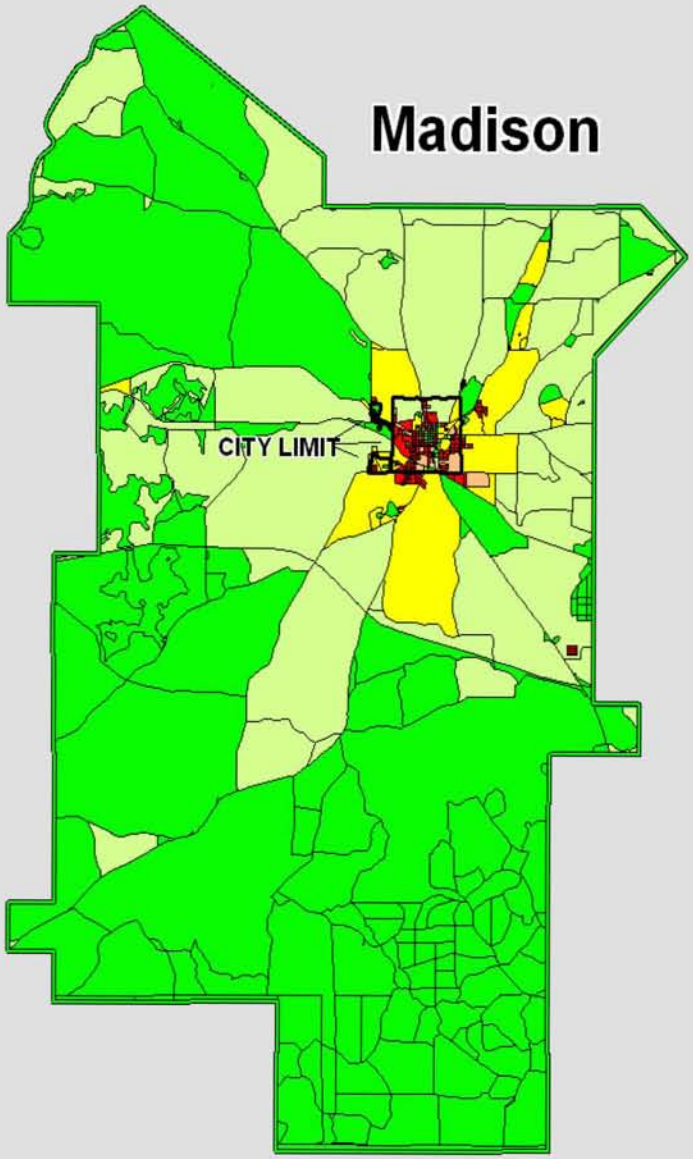

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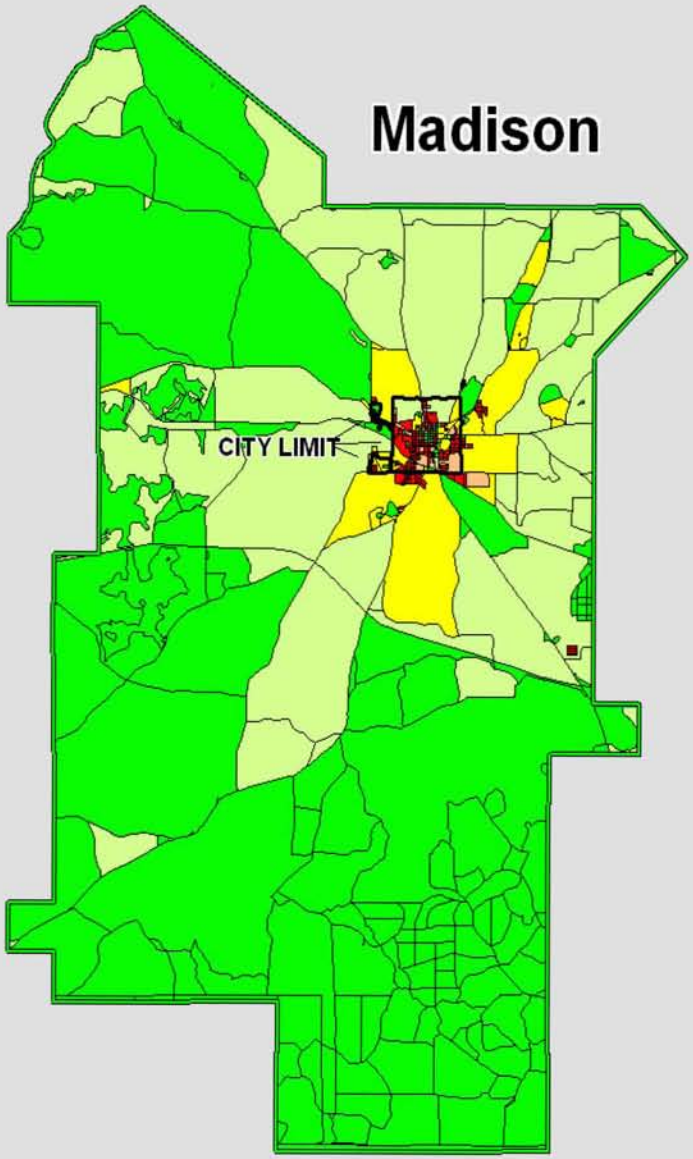

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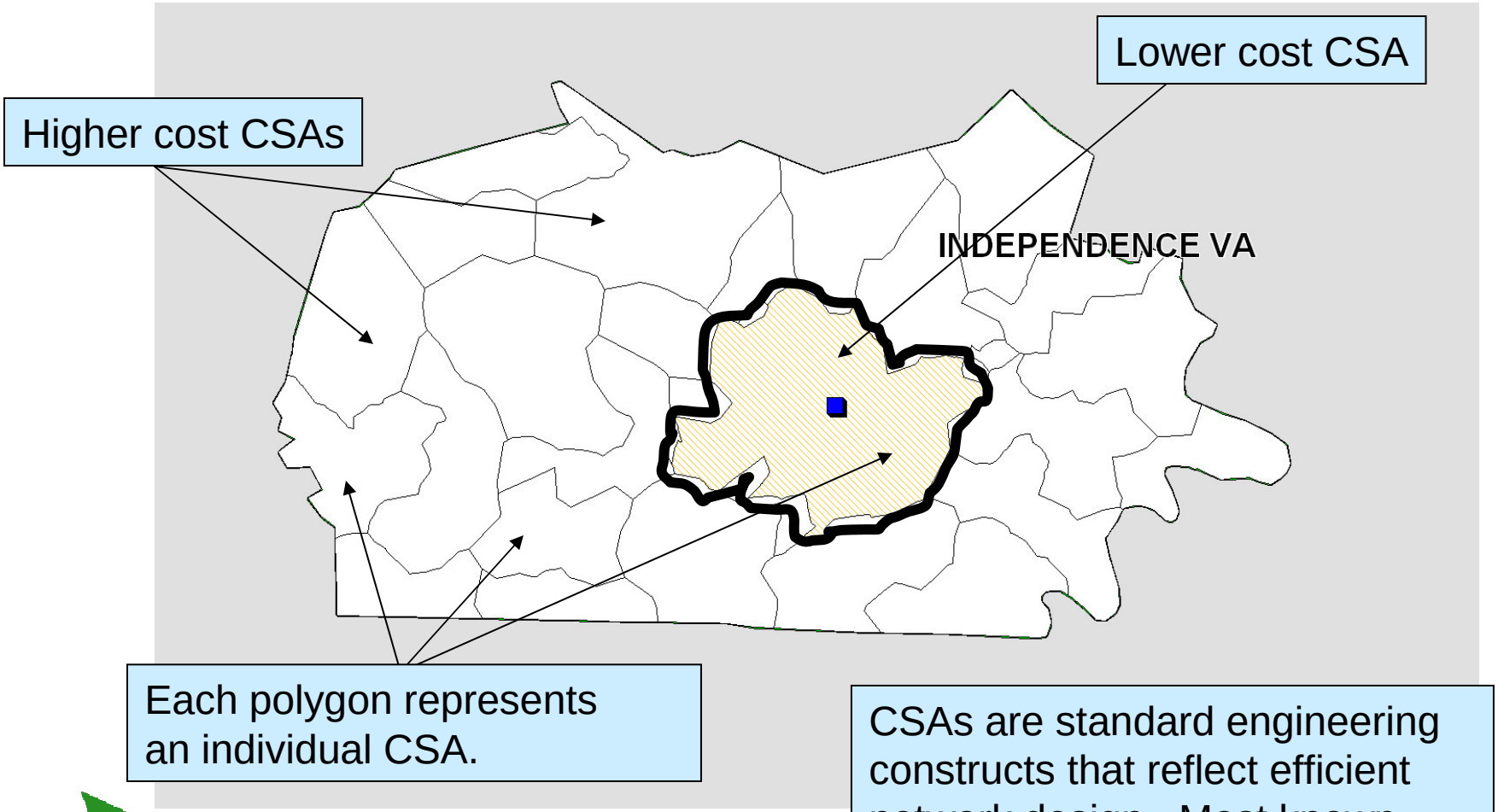
Alternately, **carrier serving areas** (CSAs) could be used as basic building block of inner v. outer zone.



CSAs are standard engineering constructs that reflect efficient network design. Most known models—HCPM, Embarq, CostQuest—utilize CSA design.

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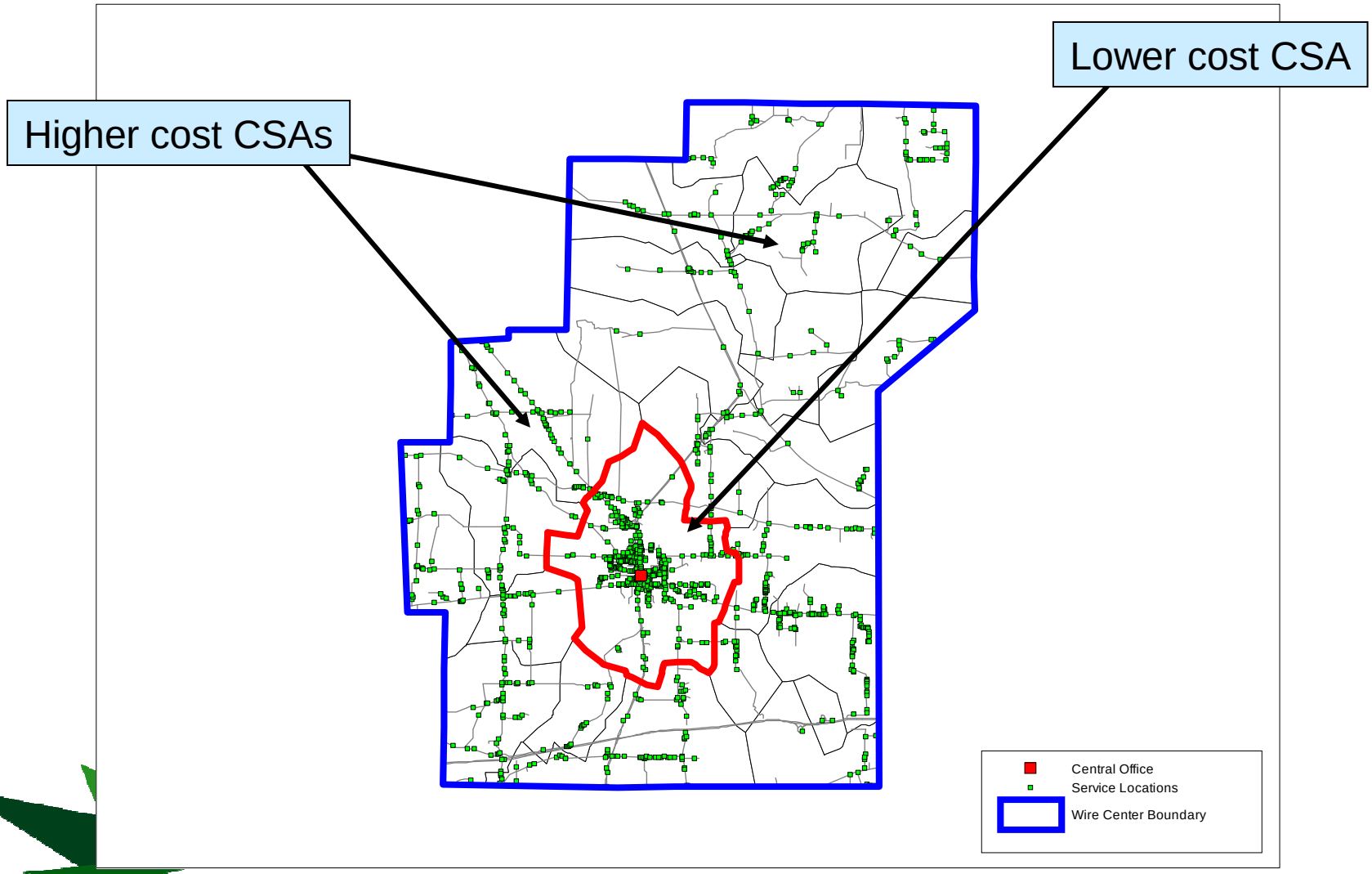
Cottondale, Florida



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Alternately, **clusters**—such as those produced by the FCC's HCPM Model—can be used to separate wire centers into high density / low cost zones v. Low density / high cost zones.

Cluster 1 makes up Inner Zone: High density / low cost

Actual Output from HCPM workfile for Independence VA

CLLI	Cluster	Total Lines	Area	Density	Investment Per Line
INDPVAXA	Cluster 1	535	3.3	159.2	$ 885
INDPVAXA	Cluster 2	78	2.7	29.2	$ 3,273
INDPVAXA	Cluster 3	28	2.9	9.8	$ 6,285
INDPVAXA	Cluster 4	44	2.8	15.5	$ 4,892
INDPVAXA	Cluster 5	51	4.6	11.0	$ 5,019
INDPVAXA	Cluster 6	45	4.9	9.1	$ 4,897
INDPVAXA	Cluster 7	35	2.1	16.3	$ 4,098
INDPVAXA	Cluster 8	71	4.2	17.0	$ 3,446
INDPVAXA	Cluster 9	65	2.5	25.6	$ 2,865
INDPVAXA	Cluster 10	36	3.6	10.0	$ 4,762
INDPVAXA	Cluster 11	32	2.8	11.4	$ 5,477
INDPVAXA	Cluster 12	22	1.9	11.6	$ 5,551
INDPVAXA	Cluster 13	77	4.5	17.3	$ 4,148
INDPVAXA	Cluster 14	71	2.9	24.8	$ 3,174

Clusters 2-14 make up Outer Zone: Low density / high cost

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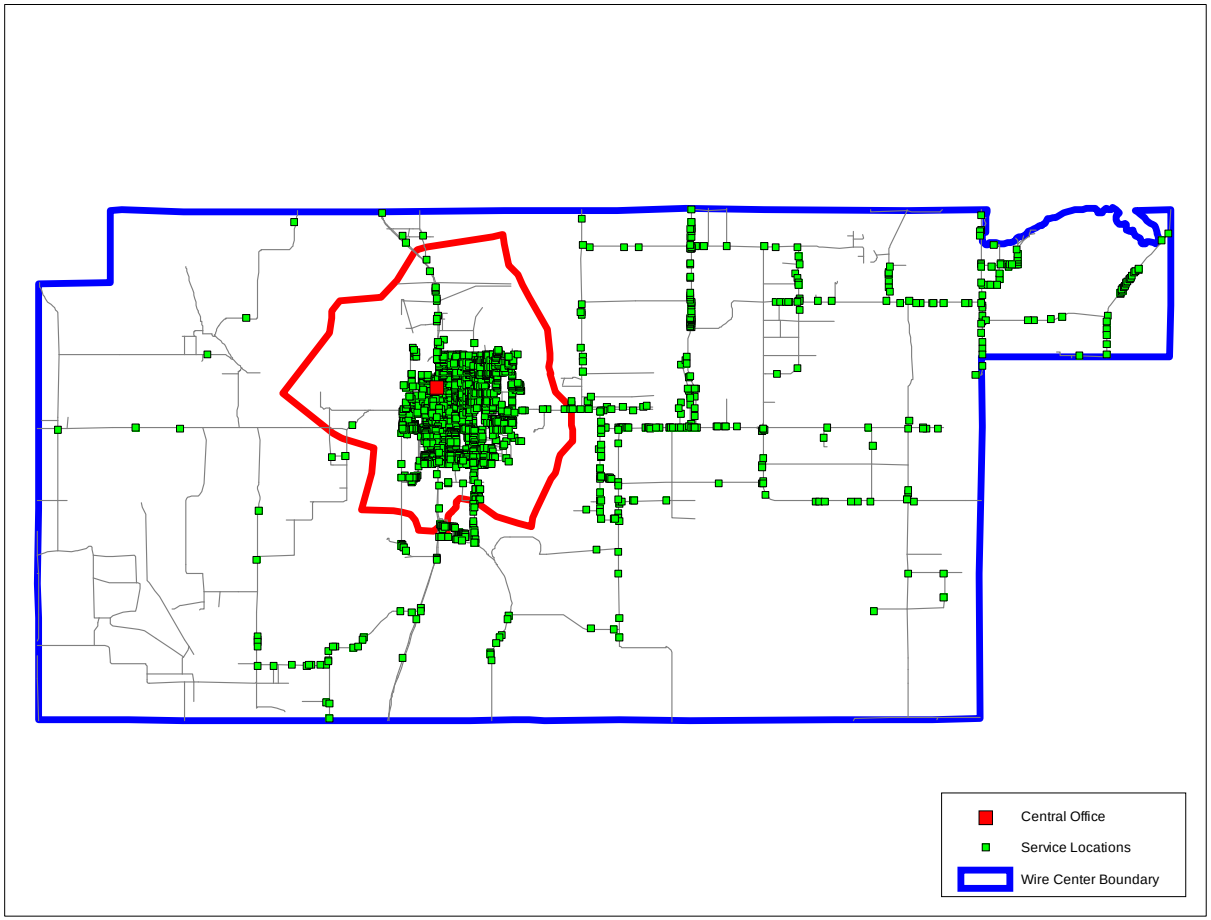
How it could work…Fort Meade FL



Zone 1: Downtown CSA has cost of $26.90 per line per month

Zone 2: Outlying areas (remaining CSAs) have cost of $68.69 per line per month

Assume $60 benchmark

2,188 lines in Zone 1 receive $0 support

708 lines in Zone 2 receive total of $73K annually in support

Any provider could receive support if it is shown that service is provided throughout high-cost area, which is Zone 2 (in its entirety).

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Sub-Wire Center Support and Policy Issues

- Forward-looking v. embedded costs
  - Additional granularity requires some type of model and cost estimation
  - This does not preclude use of embedded costs for some carriers if such a policy decision is made
  - FLEC used as mechanism for disaggregating embedded costs
  - Must consider advances in FLEC estimation since RTF

Example…Moore Haven FL
Embedded Cost of Serving
Moore Haven Wire Center:
$48 per line per month

FLEC Cost of Serving
Moore Haven Wire Center:
$46
FLEC Zone 1 Cost: $28
FLEC Zone 2 Cost: $84

Apply ratios to embedded:
28/46 * $48 = $29.22
84/46 * $48 = $87.65

Result: Zone-specific costs based on embedded costs.

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Sub-Wire Center Support and Policy Issues

- Identical support rule
  - More granular support has no effect on ability to eliminate or maintain identical support rule
  - Higher-cost areas tend to be higher-cost for all network technologies
  - Costs of serving inner v. outer zones can be modeled for all technologies
  - Carrier should actually be incurring the cost of serving supported area

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Sub-Wire Center Support and Policy Issues

- Proper benchmark
  - More granular support has no effect on decision to use:
    - cost benchmark
    - rate benchmark
    - revenue benchmark
  - Choice (and level) of benchmark will ultimately determine which of the more granular areas will receive support and which will not
  - Benchmark will determine overall fund size, not area

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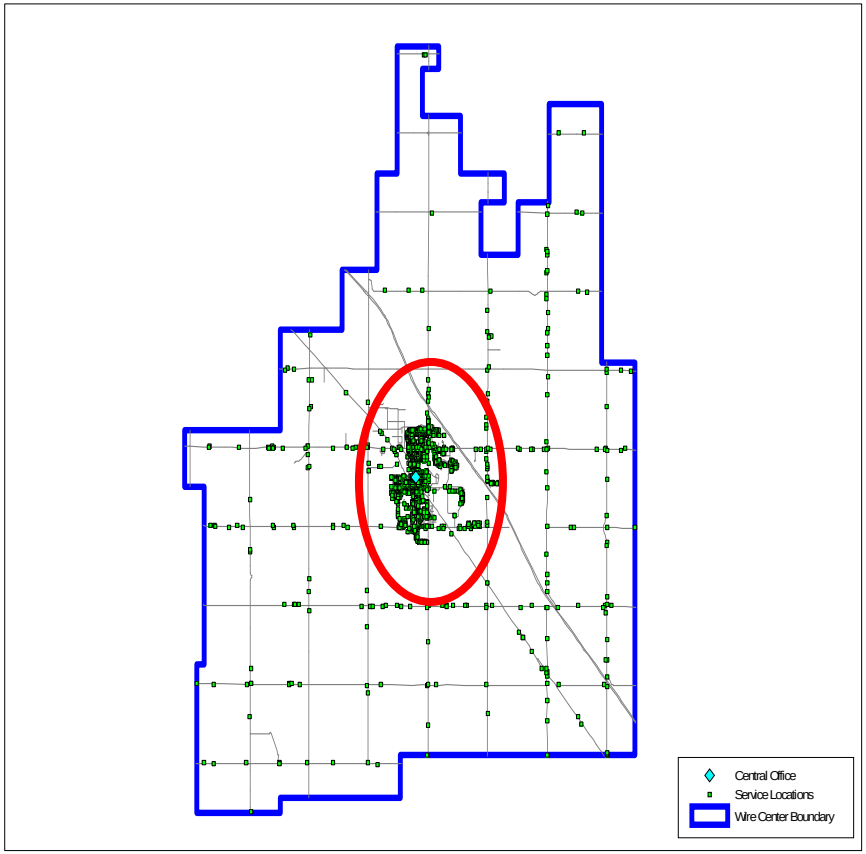
Sub-Wire Center Support and Policy Issues

- Reverse Auctions
  - Sub-wire center ensures companies bidding to receive support are actually serving areas that really require support
  - Support may be eliminated for downtown area
  - Bids would be to serve outlying area in its entirety since that is true high-cost area



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Sub-Wire Center Support and Policy Issues

- Broadband
  - More granular support has no impact on policy decision to expand list of supported services to include broadband
  - Cost calculations would have to change to incorporate additional investment and expense
  - All else held equal, support dollars would have to increase significantly

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Summary and Conclusions

- Current USF system incorporates implicit subsidies.
- Assumes implicit subsidies can be used to offset costs of serving uneconomic areas.
- They can't.
  - Competition prevents low-cost wire centers from subsidizing high-cost wire centers.
  - Competition prevents low-cost portions of a wire center from subsidizing high-cost portions of the same wire center.
- Therefore support must be calculated at a more granular level: sub-wire center.

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Summary and Conclusions (cont.)

- This is not the same as dis-aggregating existing support to a sub-wire center level.
- A sub-wire center approach can be implemented today.
  - Models currently exist that are more than capable.
  - Advances in modeling make almost any form of increased granularity possible.
- Sub-wire center approach is separable from almost every other policy issue.

Whatever services, whichever companies end up being supported, this is proper method for determining where support belongs and where companies must provide service in order to earn that support.

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